



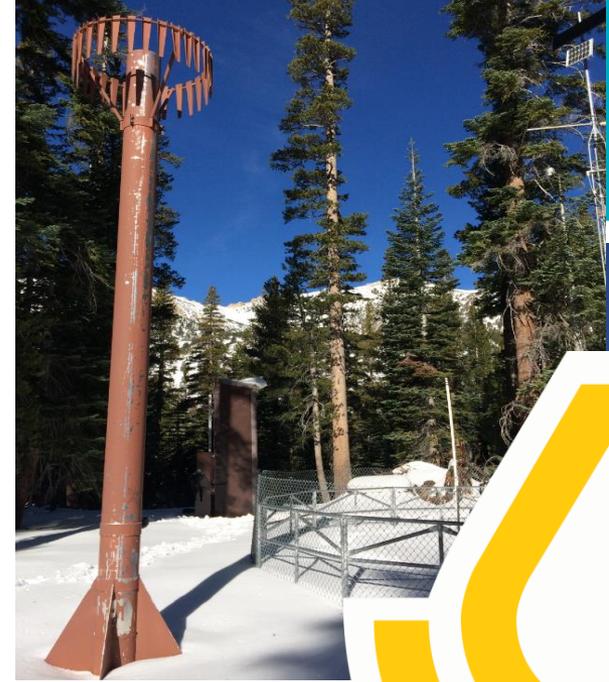
United States Department of Agriculture

2020 Snowpack Status and Streamflow Outlook for the Truckee, Carson, Walker and Humboldt Basins

March 12, 2020
Nevada Division of Water Resources

Jeff Anderson
Snow Survey Hydrologist
NRCS – Nevada

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Natural
Resources
Conservation
Service

Snow Program Staffing Improvements

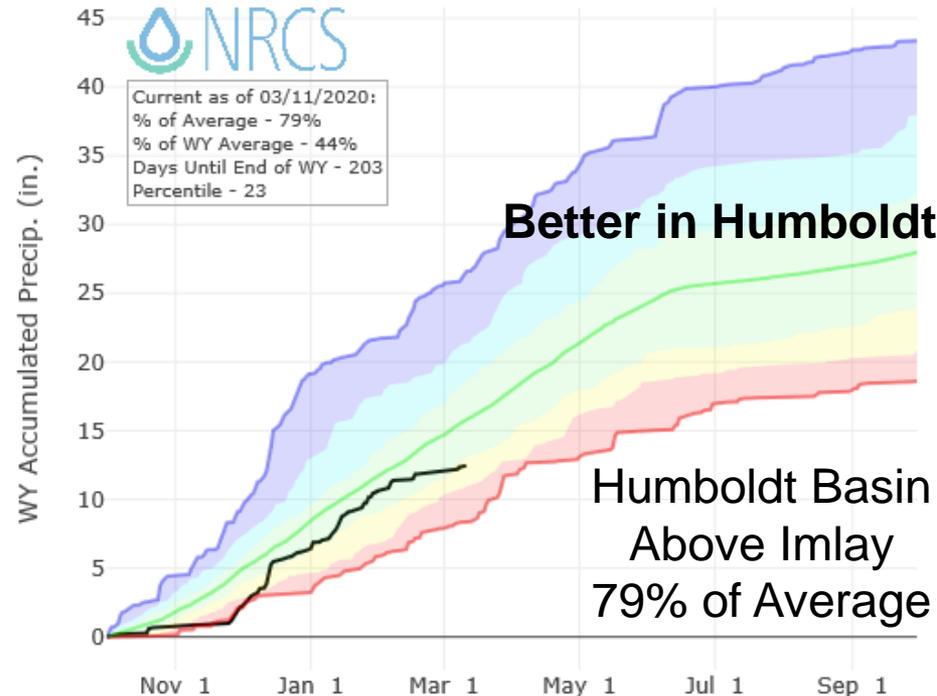
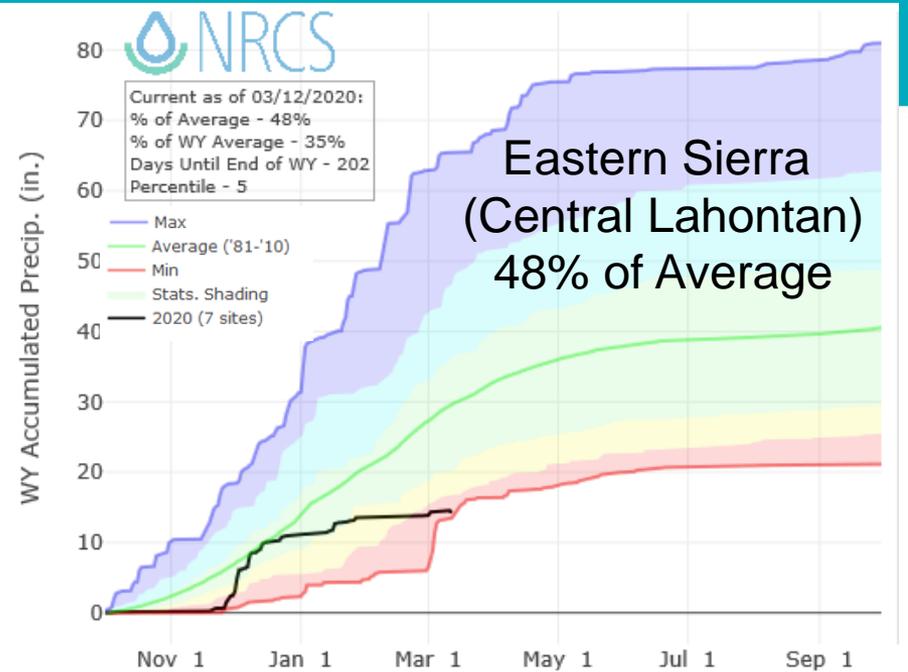
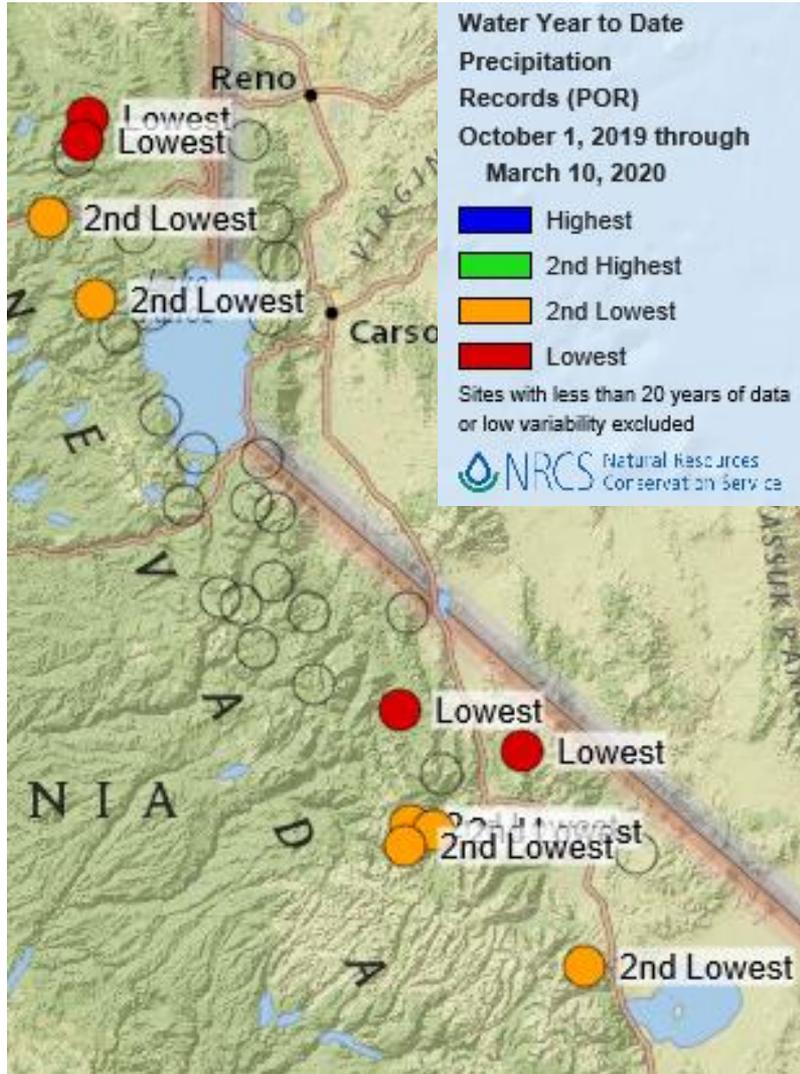
National Water and Climate Center

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Program Management	
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Secretary	Vacant
Management Analyst	Bruce Green 503-414-3010
Natural Resources Specialist	Heather Hofman 503-414-3030
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Forecast Hydrologist	Lexi Landers 406-587-6874
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Electronics Maintenance Facility Lead	Vacant (in progress)
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Statistical Assistant	Vacant

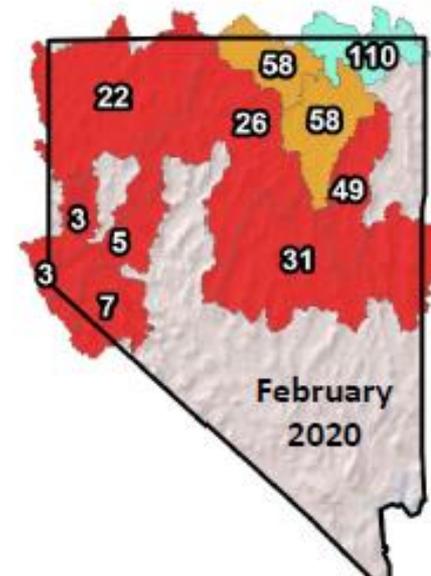
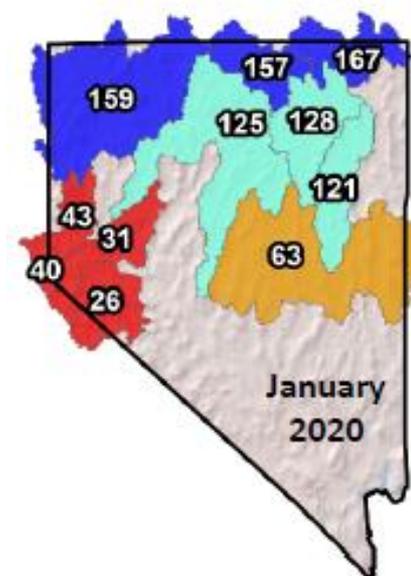
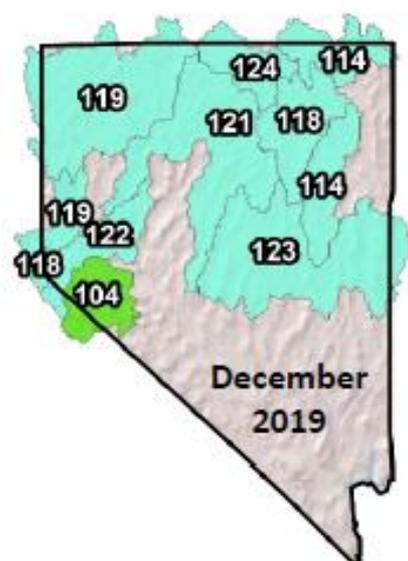
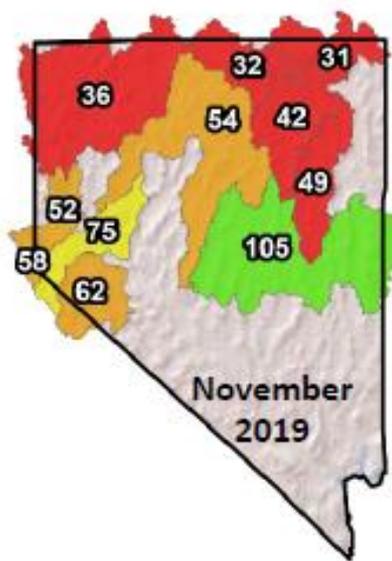
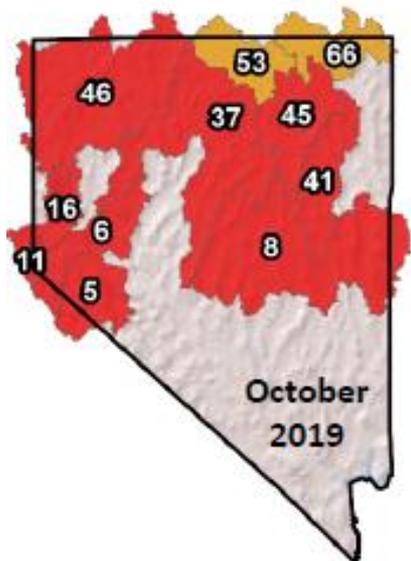
Utah Data Collection Office

Name	Position
Jordan Clayton	Data Collection Officer
Troy Brosten	Hydrologist
Kent Sutcliffe	Soil Scientist
David Eiriksson	Hydrologist
Doug Neff	Electronic Technician
Vacant	Hydrologist (in progress)

Water Year Precipitation Near Record Low in Sierra

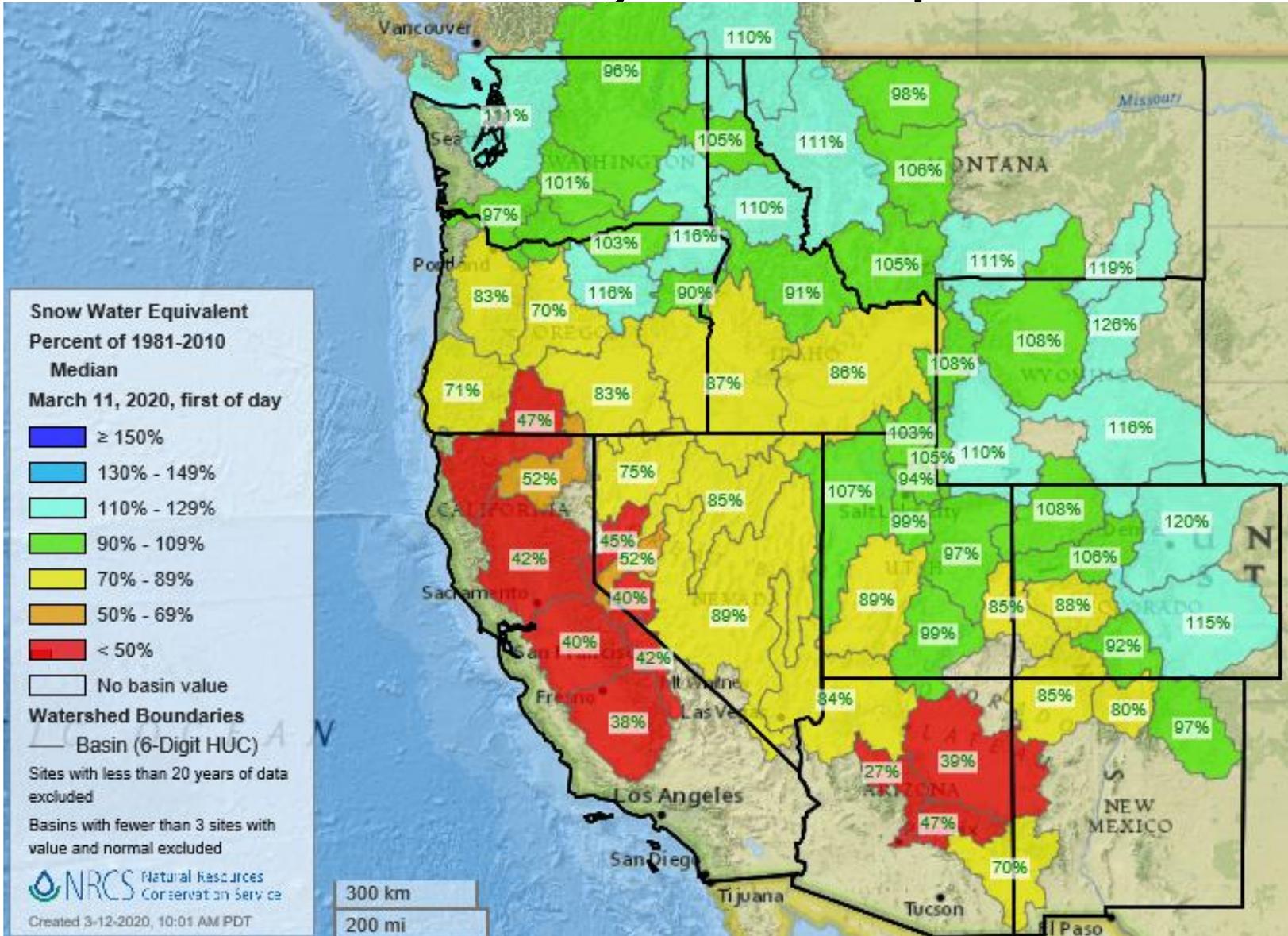


Monthly Precipitation as Percent of Average – Water Year 2020



MTD thru
3/10/20
~30-40%

Today's Snowpack



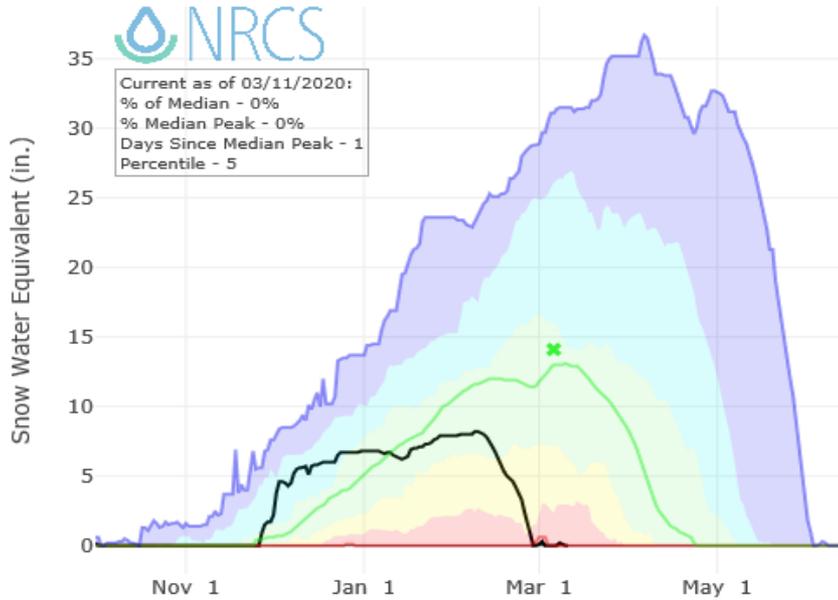
Snow is Gone on Southern Aspect Slopes



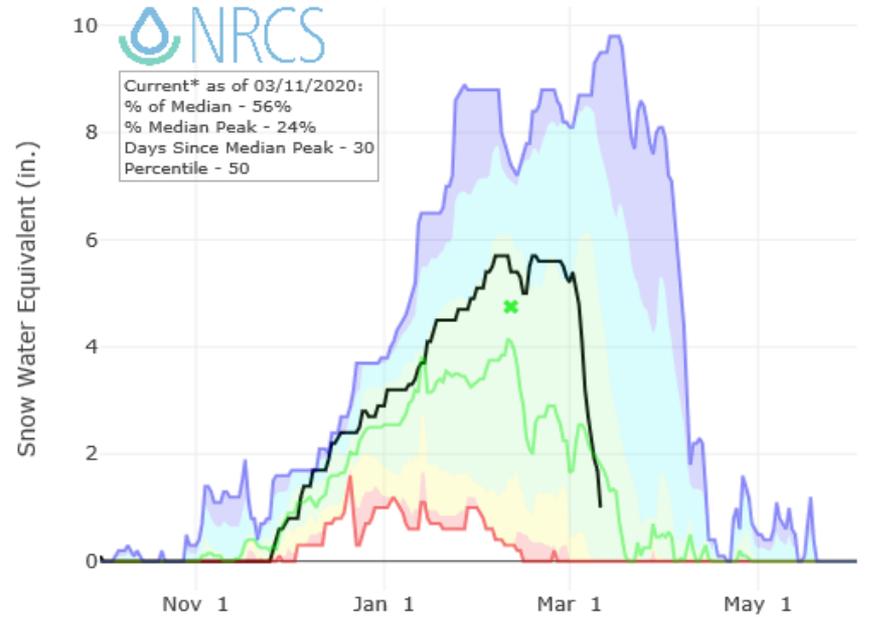
Carson Range, East of Lake Tahoe on 2/26/20



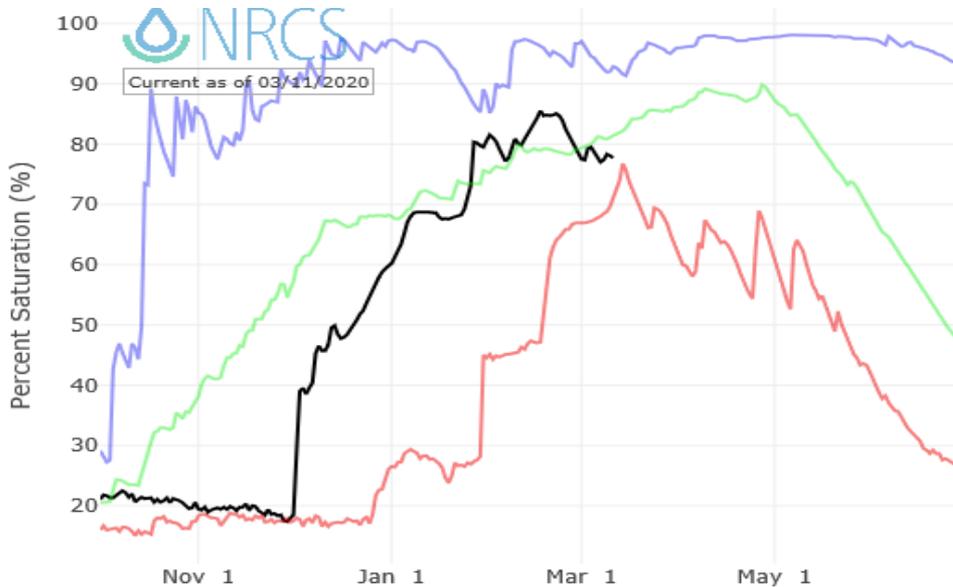
SWE – Tahoe City Cross Tahoe Basin (6,800ft)



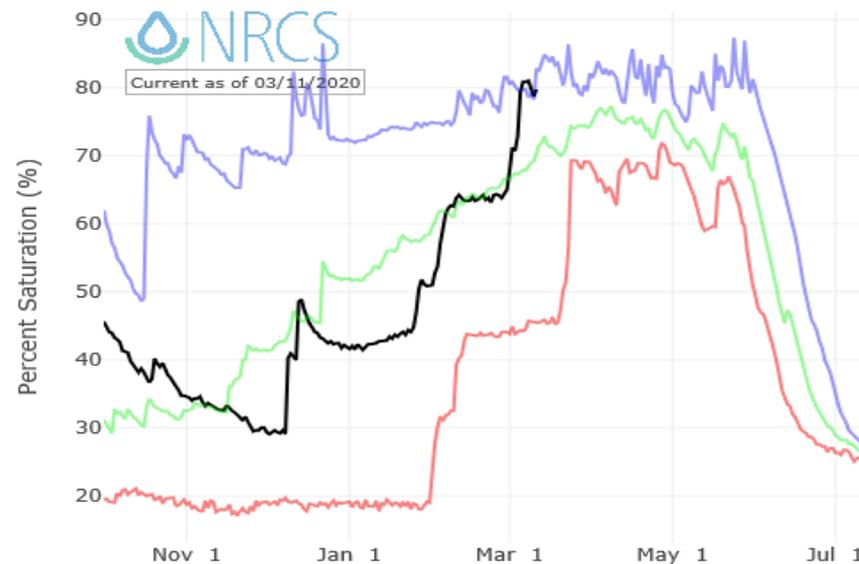
SWE – Dry Creek Upper Humboldt Basin (6,500ft)



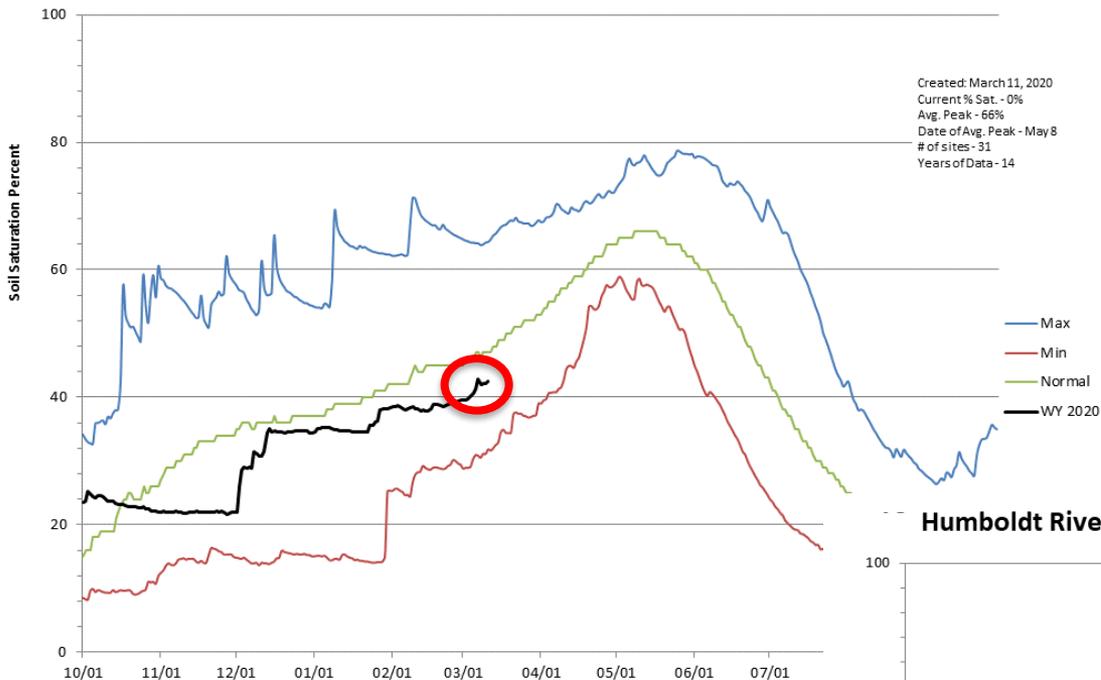
Soil Moisture – Tahoe City Cross



Soil Moisture – Dry Creek



Eastern Sierra (Central Lahontan) - Soil Saturation

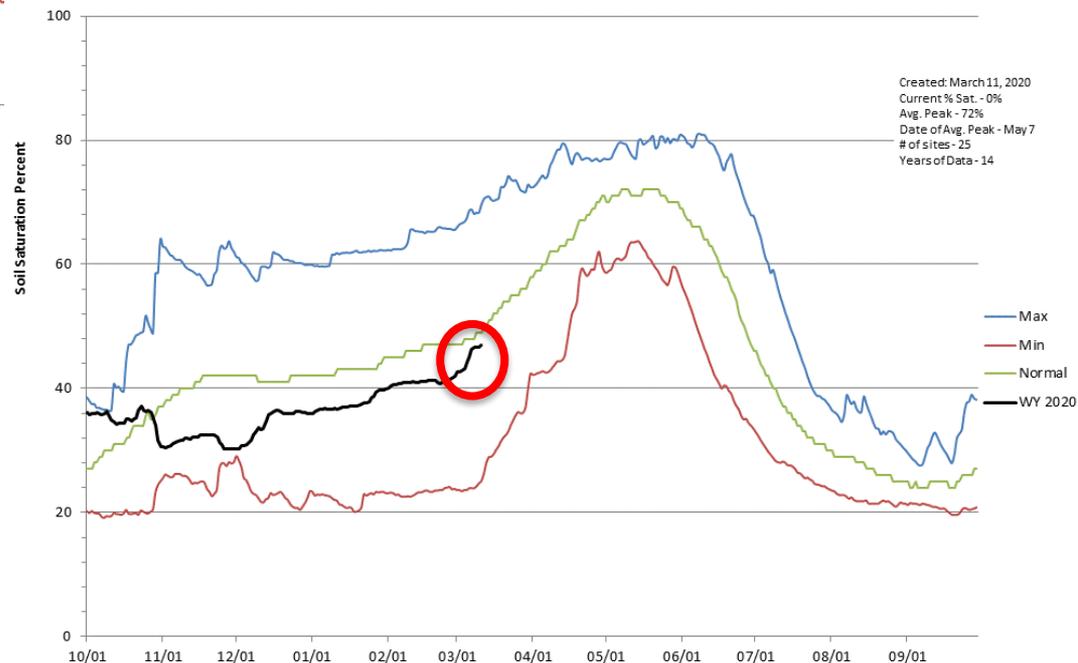


Basin Soil Moisture is below average

Soil Moisture Max, Min and Average based on 2005-2019 data

Recent gains likely result of melt at lower elevations

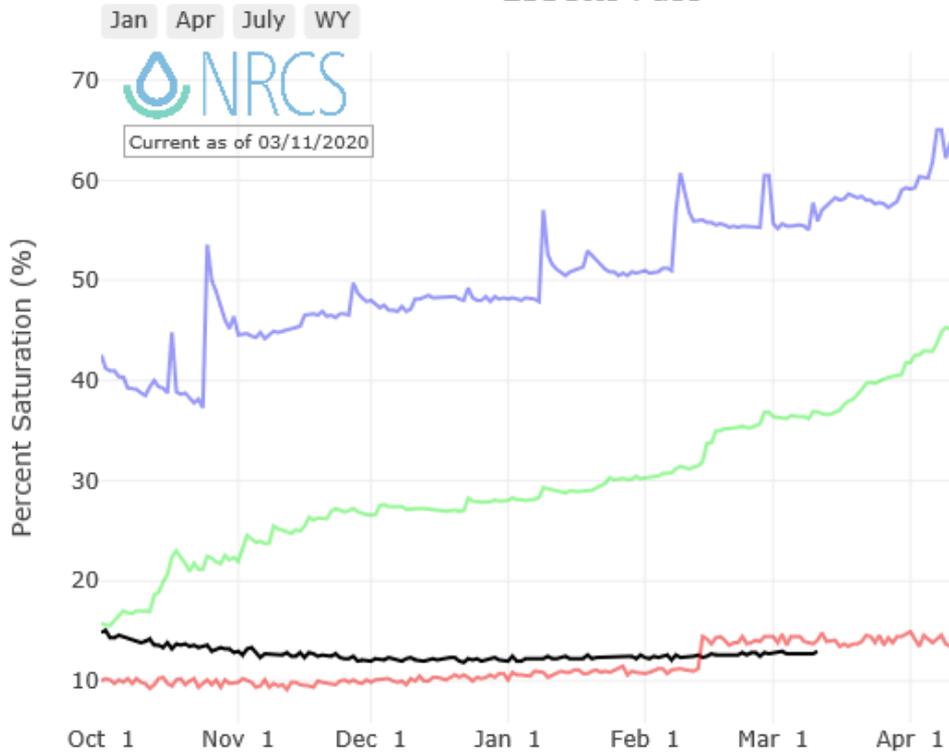
Humboldt River above Imlay - Soil Saturation



Higher elevation soils are dry → Empty sponge → Reduced Runoff Efficiency

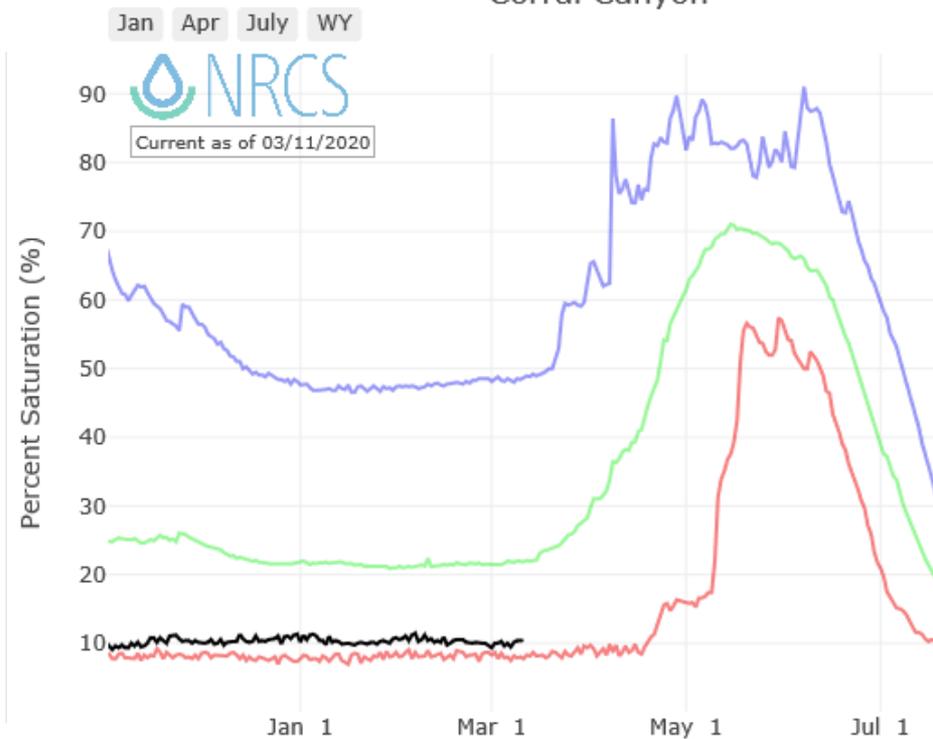
Sierra
8,765 feet elev

Depth Averaged Soil Saturation at
Ebbetts Pass



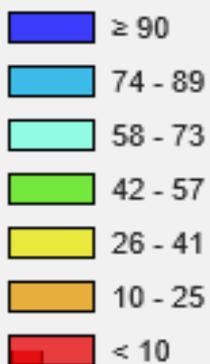
Ruby Mtns
8,500 feet elev

Depth Averaged Soil Saturation at
Corral Canyon



Mar 1, 2020 SWE Percentile

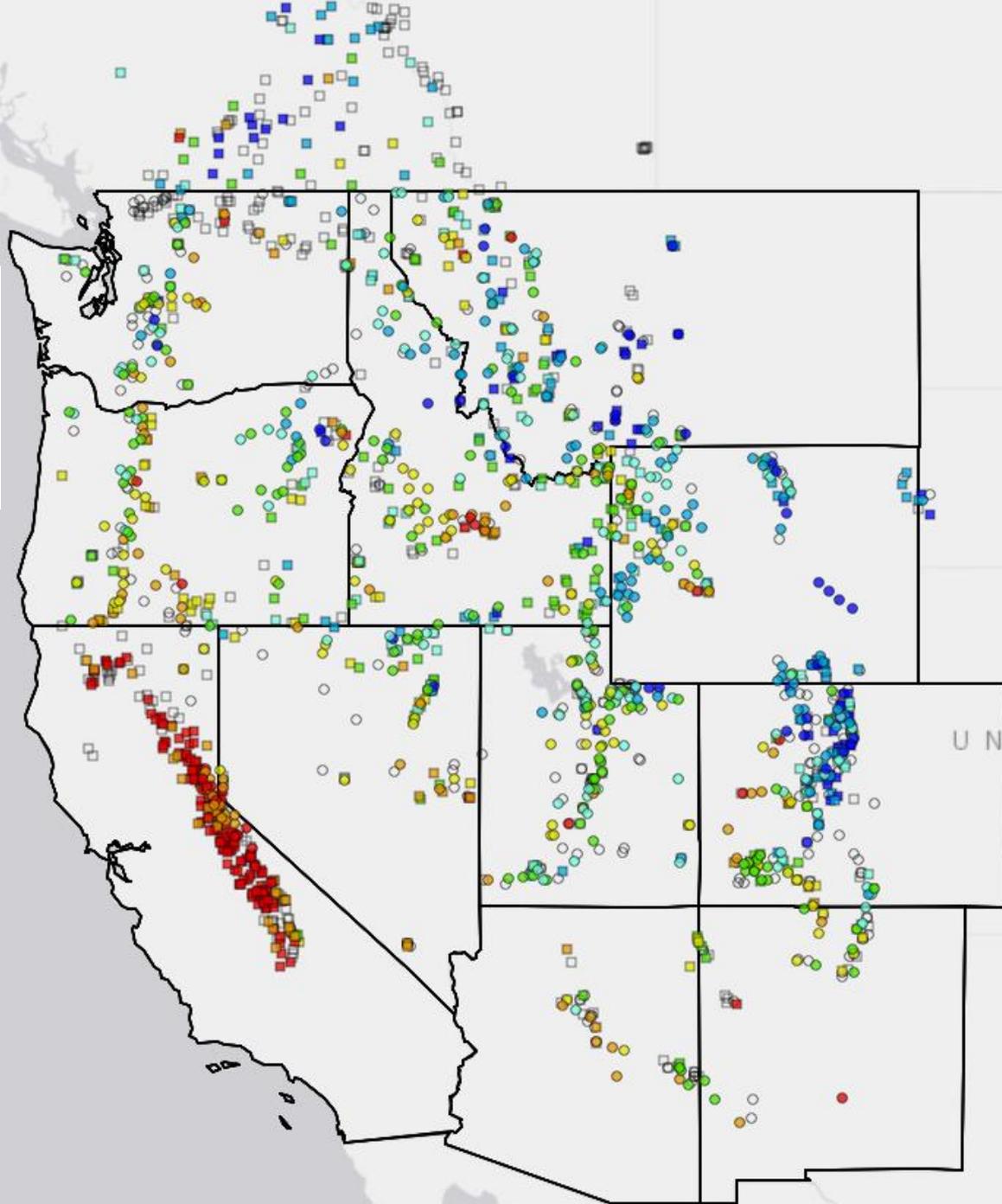
Snow Water Equivalent
Percentile (1981-2010)
Beginning of March, 2020



□ Snow Course

○ Automated Site

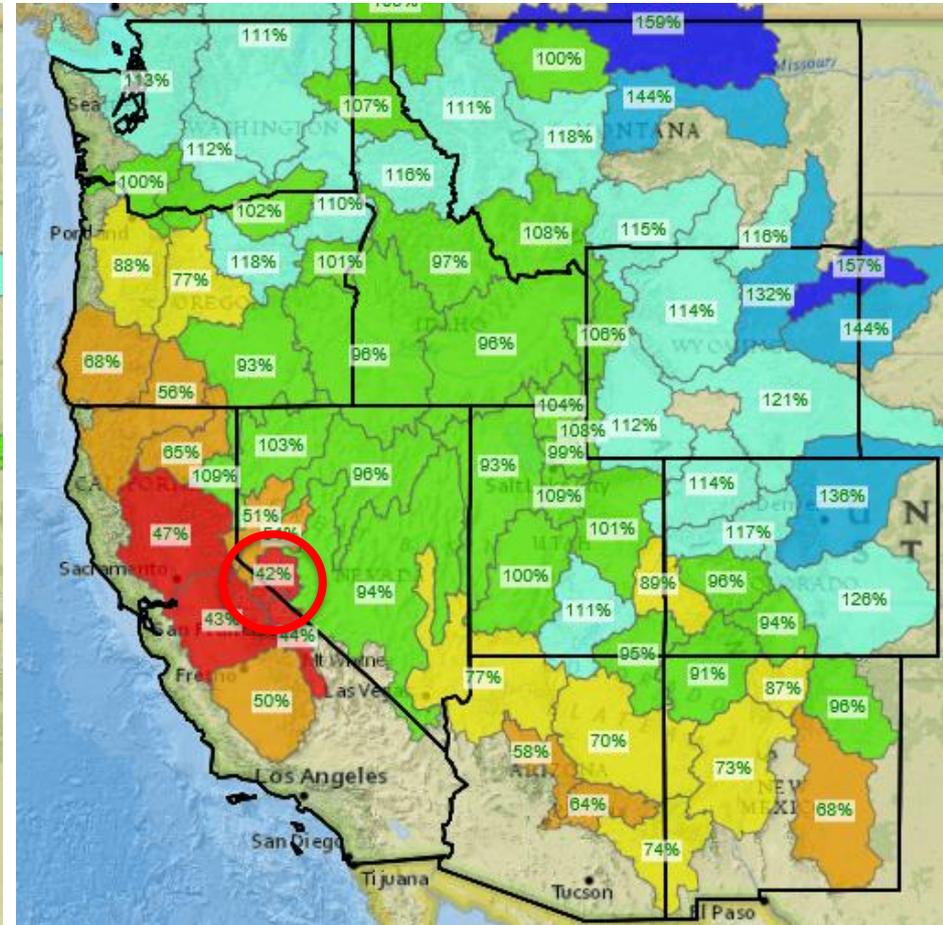
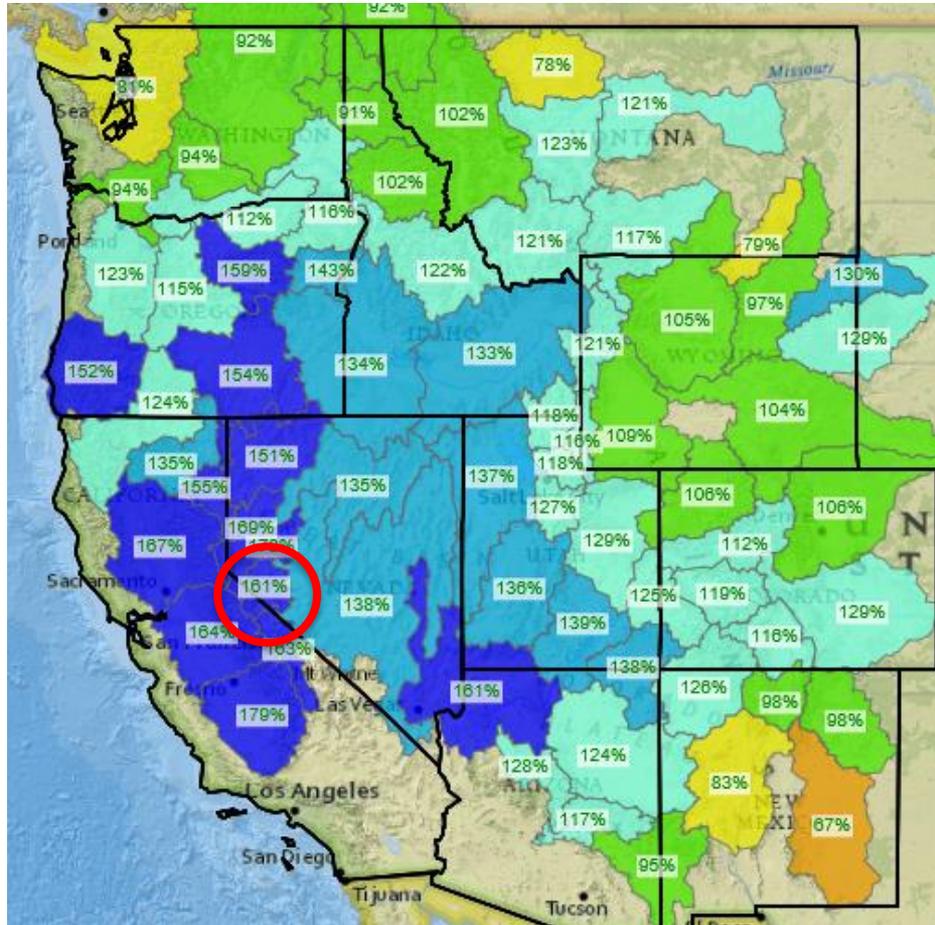
Sites with less than 20 years of data
or low variability excluded



Snow Water Equivalent % of Median

3/1/19

3/1/2020

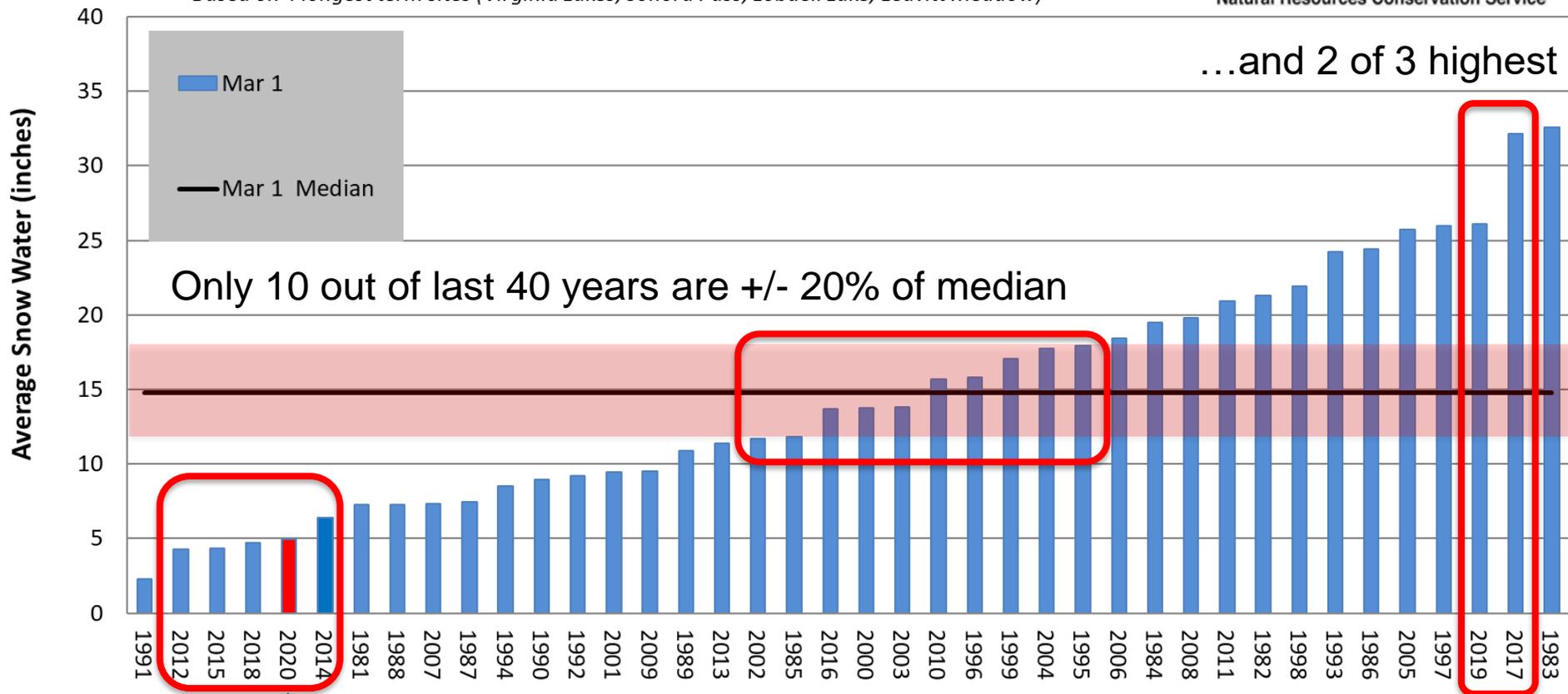


Walker Basin Math 161% (2019)
 + 42% (2020)
 —————
 203%

Divided by 2 → 2-year snowpack average = **102%**

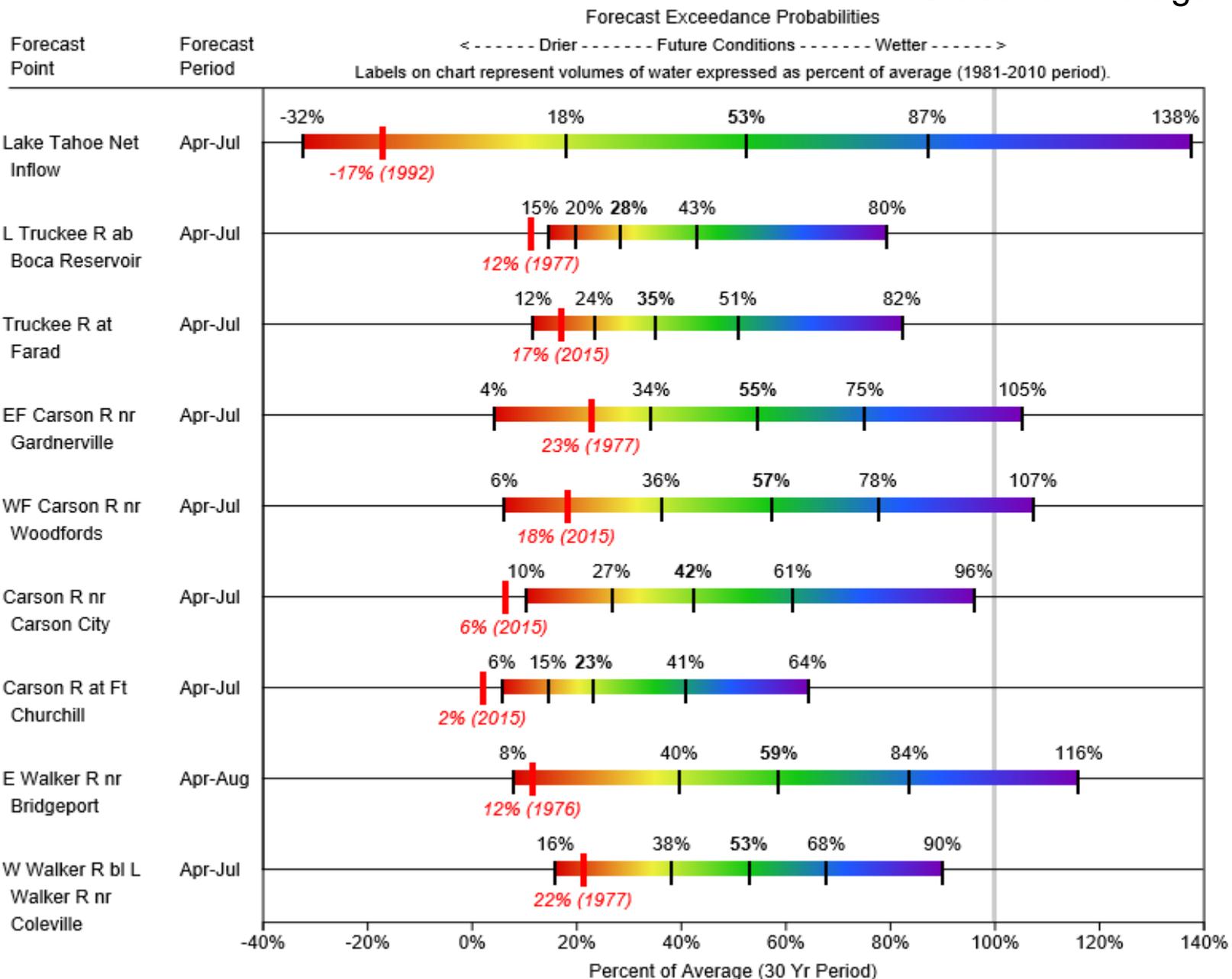
Average Snow Water in Walker River Basin Mar 1 1981-present, sorted low to high

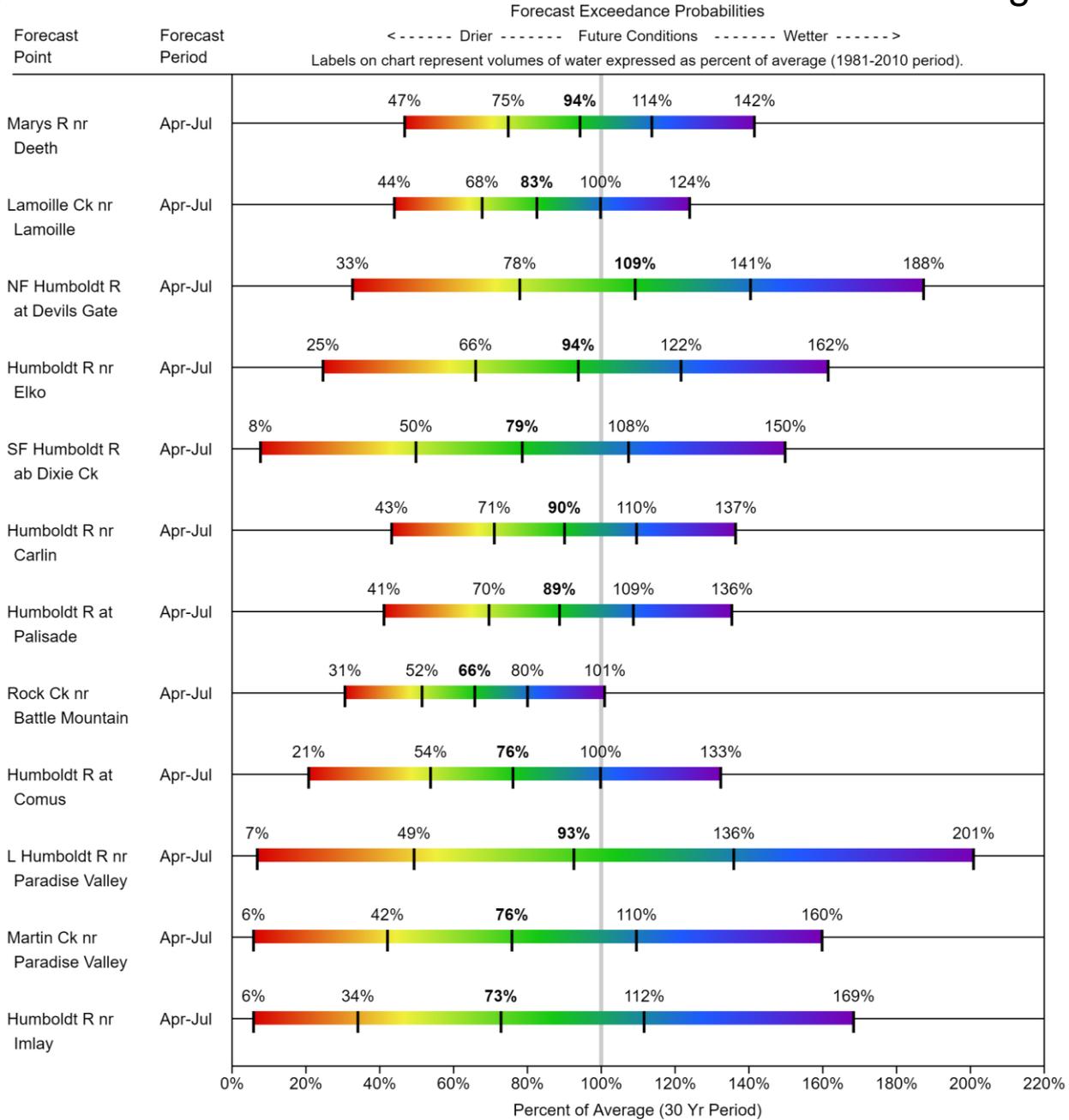
Based on 4 longest term sites (Virginia Lakes, Sonora Pass, Lobdell Lake, Leavitt Meadow)



2020 is 5th lowest since 1981

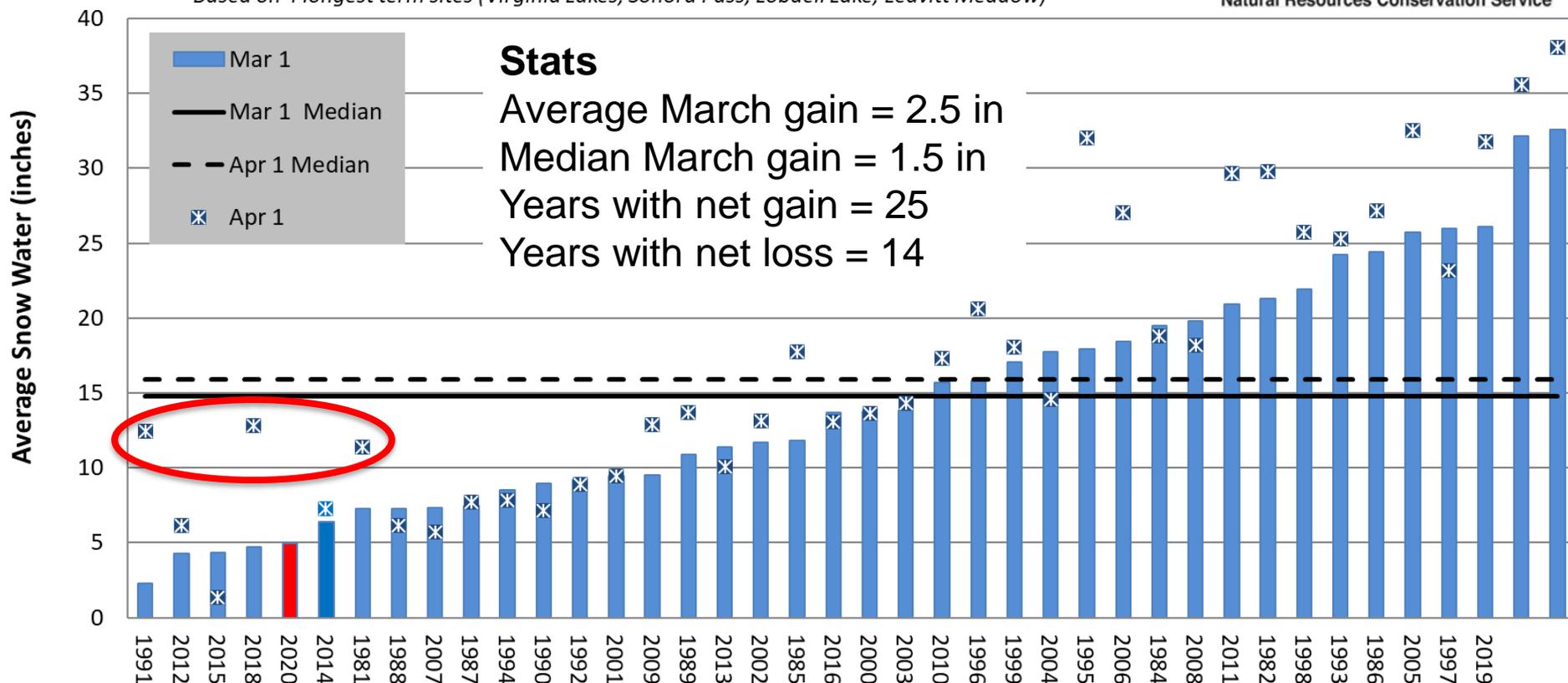
Since 2012 we seen 5 out of 6 lowest March 1 SWE's





Average Snow Water in Walker River Basin Mar 1 vs Apr 1 1981-present, sorted low to high

Based on 4 longest term sites (Virginia Lakes, Sonora Pass, Lobdell Lake, Leavitt Meadow)



3 out of 7 of the worst winters saw major comebacks by Apr 1
Of those only 2015 lost snow by Apr 1

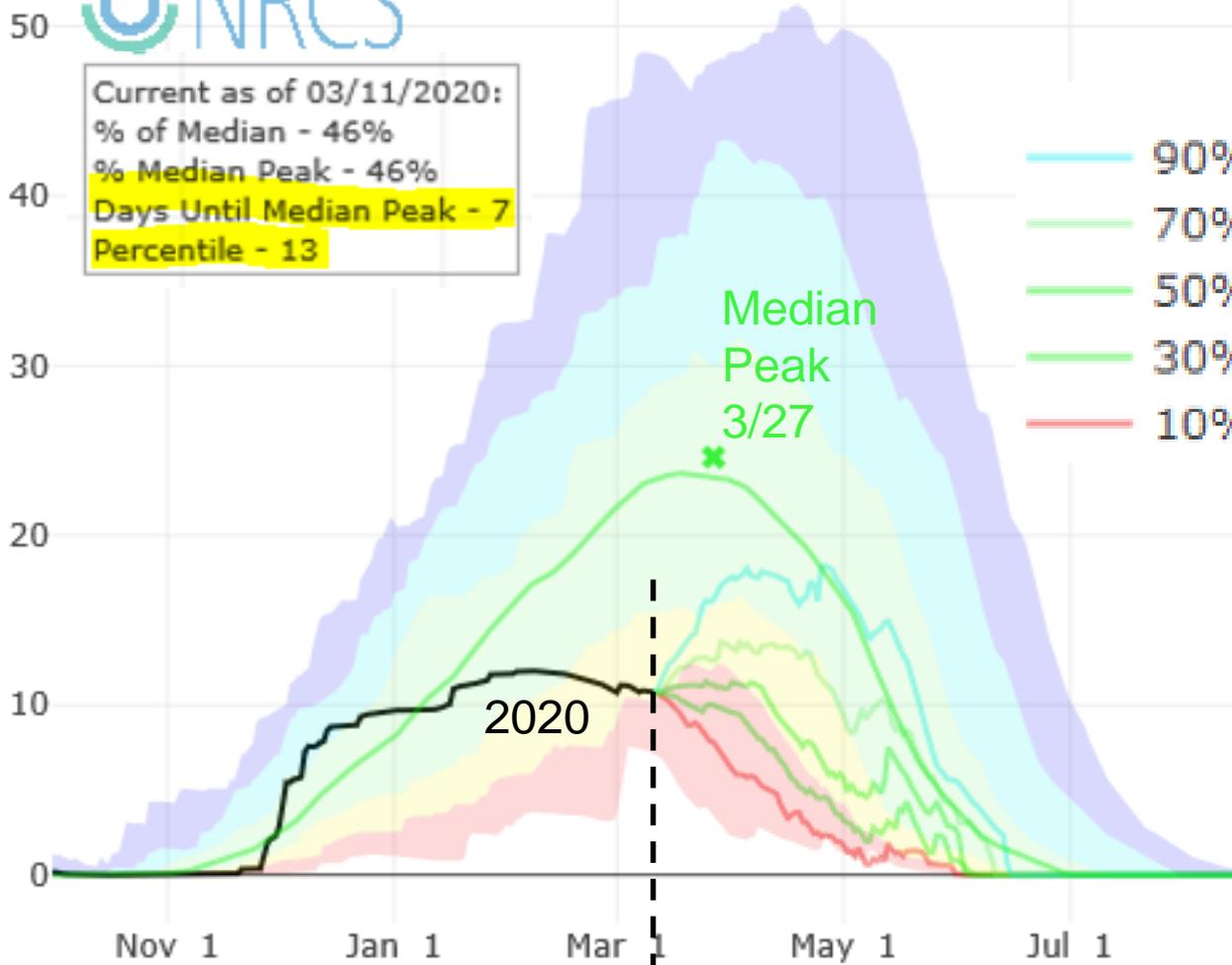
Snow Water Equivalent Projection Eastern Sierra (31 sites)



Current as of 03/11/2020:
 % of Median - 46%
 % Median Peak - 46%
 Days Until Median Peak - 7
 Percentile - 13

April 1 Projection

Snow Water Equivalent (in.)

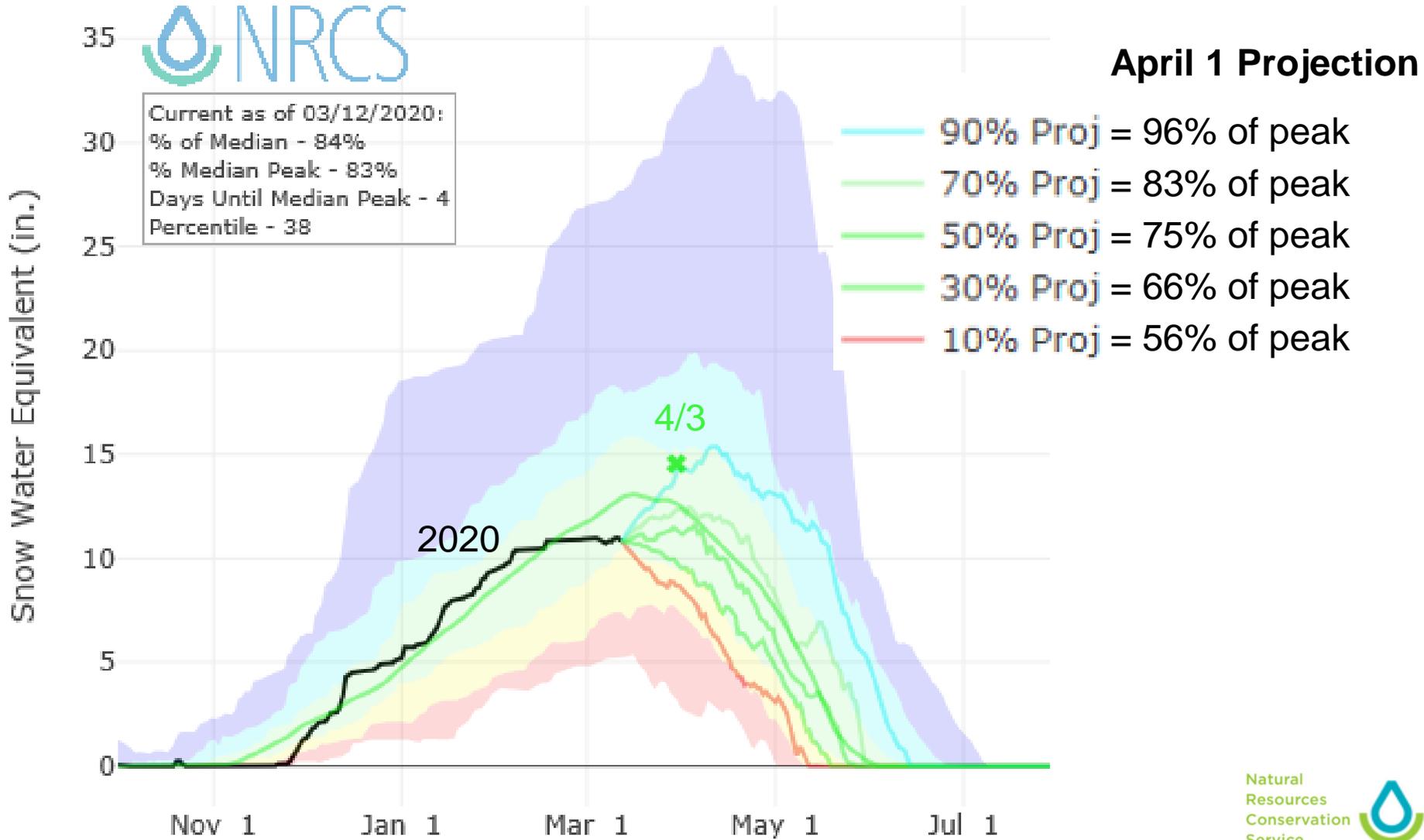


- 90% Proj = 72% of peak
- 70% Proj = 54% of peak
- 50% Proj = 46% of peak
- 30% Proj = 39% of peak
- 10% Proj = 25% of peak

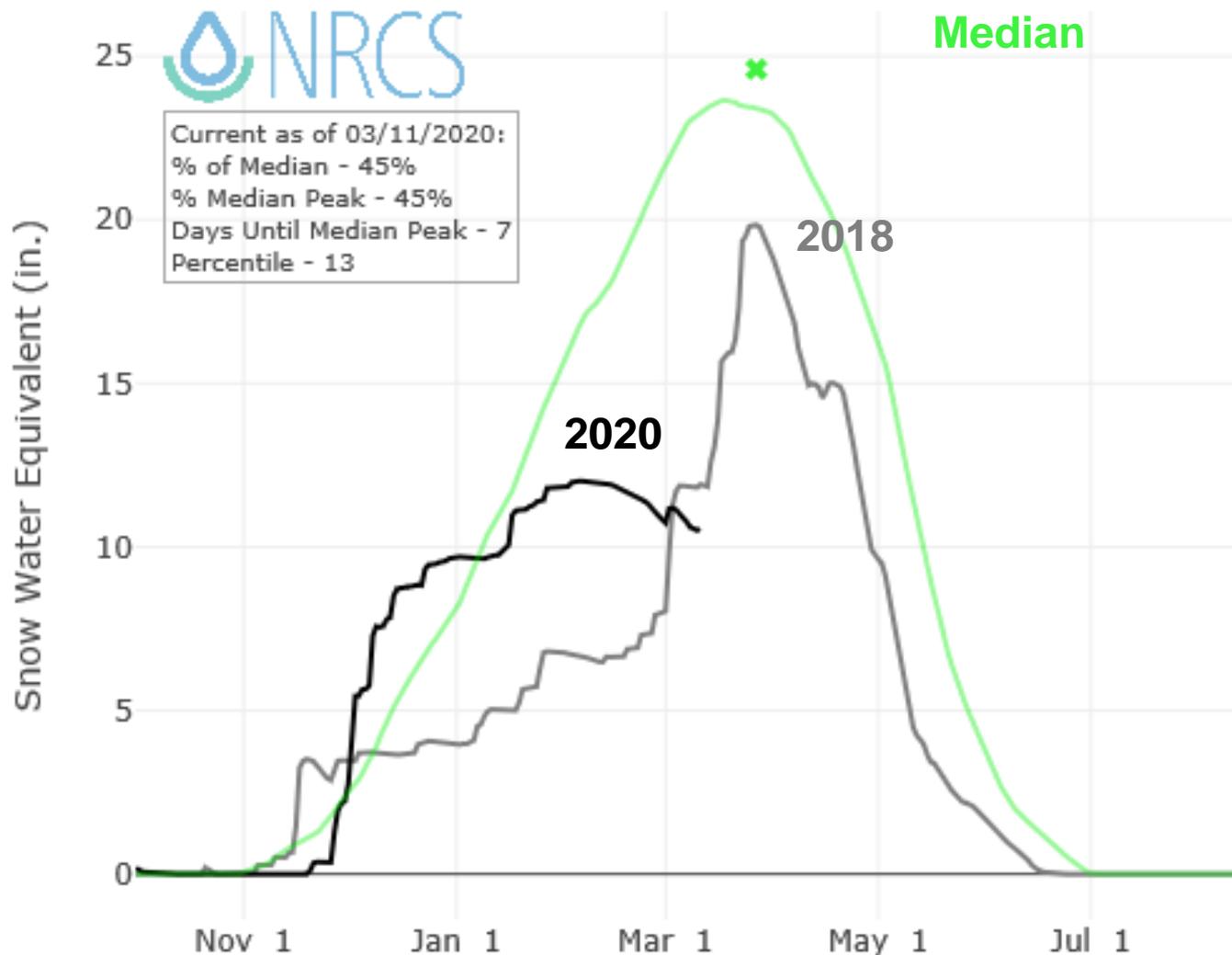
Statistical Projection



Snow Water Equivalent Projection Humboldt Above Imlay (14 sites)



Eastern Sierra - Comparison Year 2018



Eastern Sierra Basin Summary

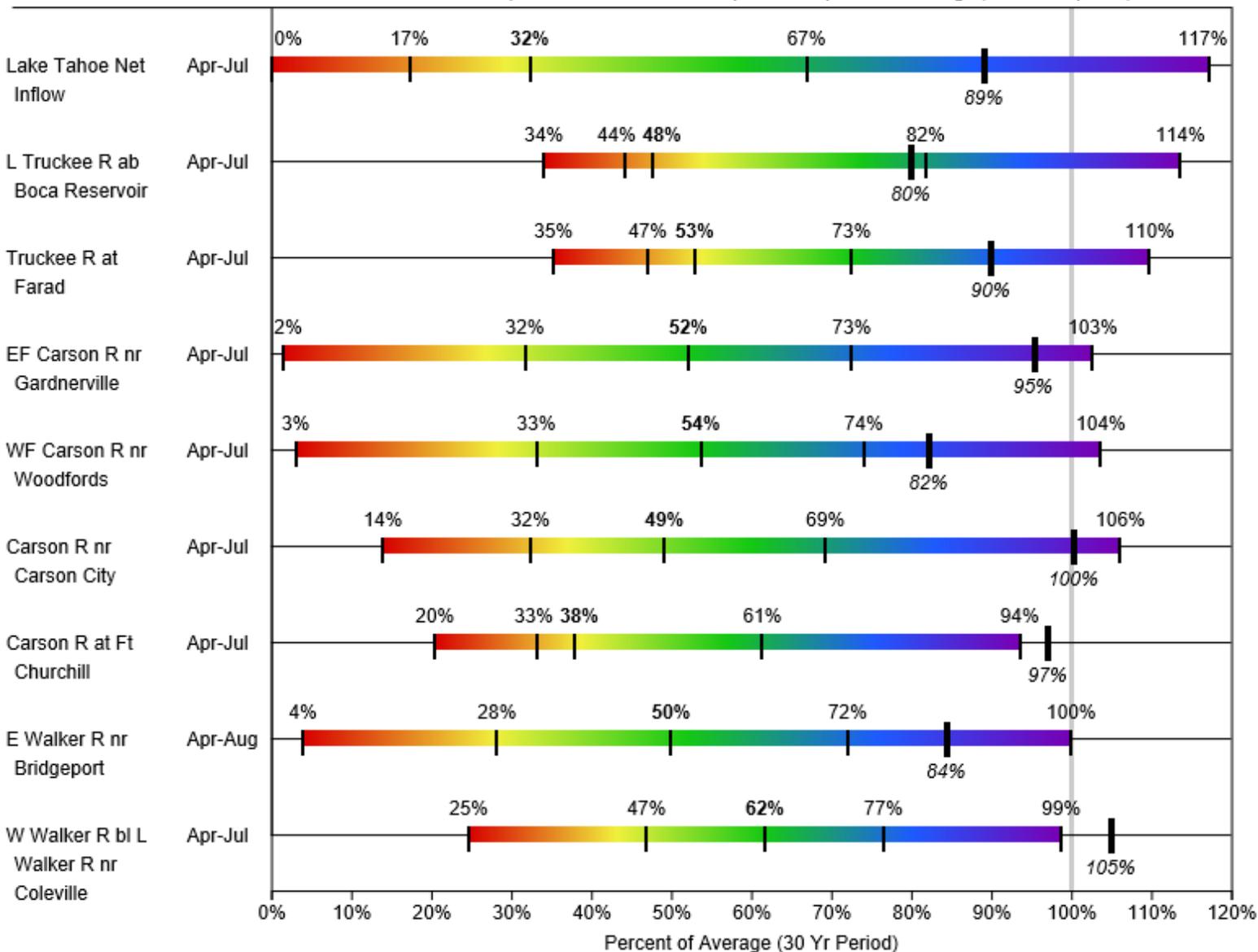
Water Supply Forecasts

March 1, 2018

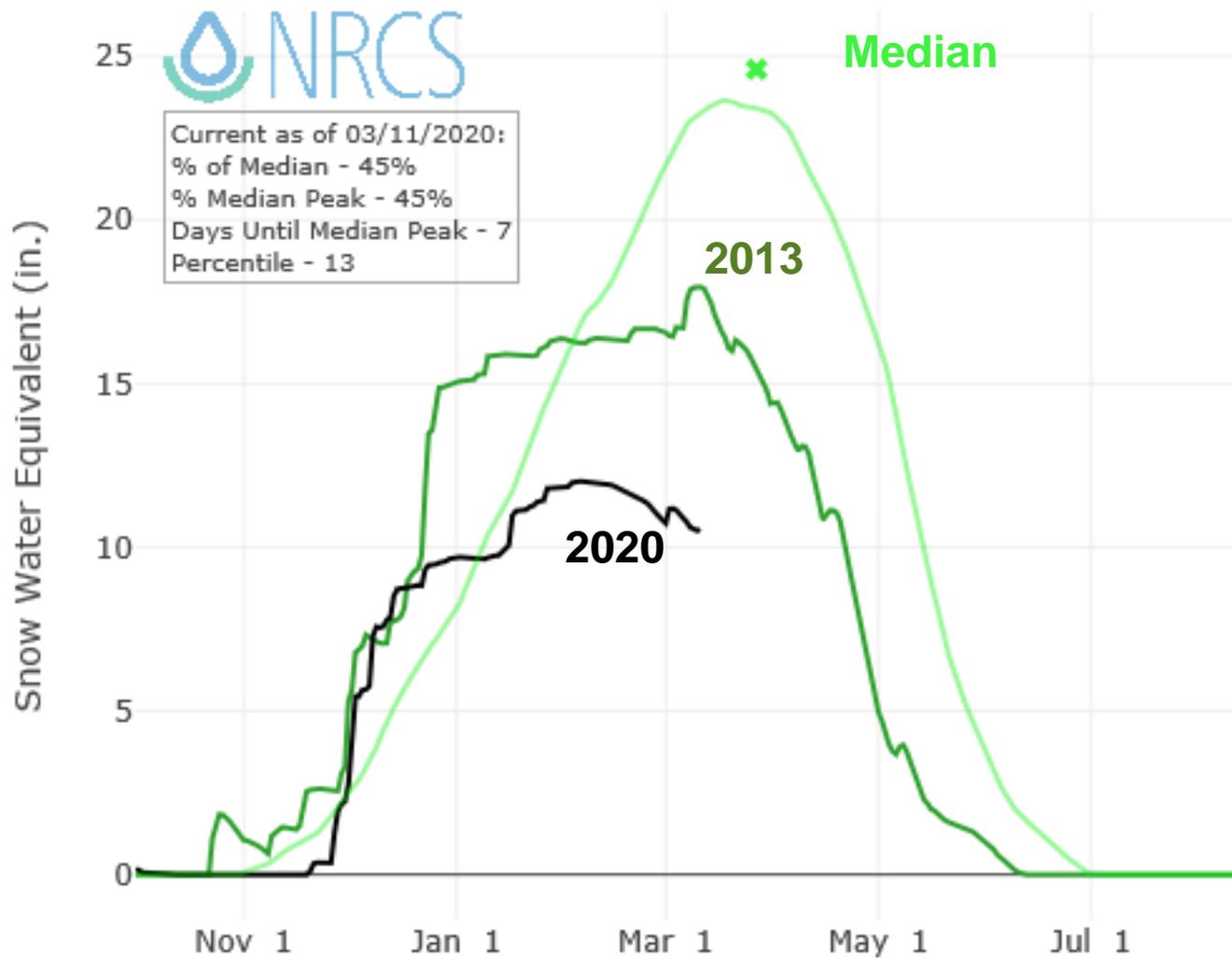
Forecast Exceedance Probabilities

< ----- Drier ----- Future Conditions ----- Wetter ----- >

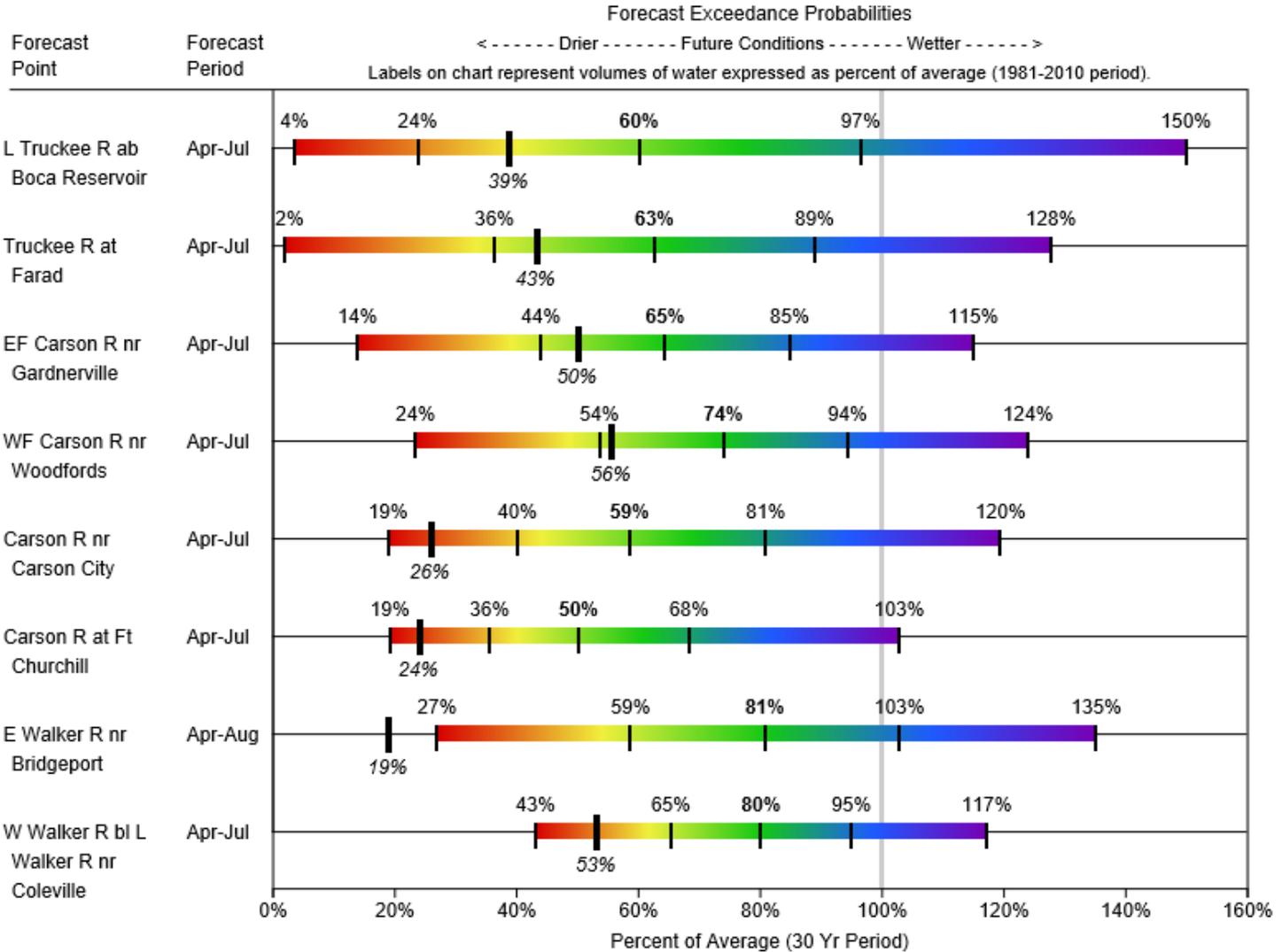
Labels on chart represent volumes of water expressed as percent of average (1981-2010 period).



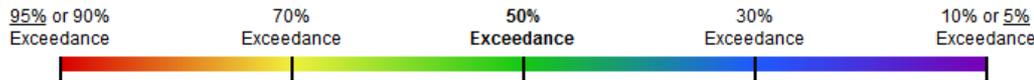
Eastern Sierra - Comparison Year 2013



Eastern Sierra Basin Summary
Water Supply Forecasts
March 1, 2013



March 1, 2013 Forecast Exceedances



Observed Streamflow KAF
Apr-Jul 2015



Key Points:



Precipitation:

- YTD 2020 is currently the lowest precipitation on record in Sierra.

Snowpack:

- Bust to date in Sierra. More normal snowpack in Humboldt.
- Extended dry period → Bare southern aspects → Reduced runoff efficiency

Soil Moisture:

- Well below average, due to dry Fall.
- Recent improvements due to melting low elevation snow.
- High elev soils dry → Empty sponge → Reduced runoff efficiency

Streamflow Forecasts:

- March 1 forecasts (*50% exceedance*)
 - Sierra ~40-60% of average
 - Humboldt ~70-90% of average
- Dry February resulted in ~30% decrease from Feb 1 forecasts
- Don't rely on 50% exceedance forecast, consider range based on future conditions
- Based on 2013, the 70% exceedance forecasts may be more realistic.